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(54) Abstract Title

Purchasing programs over the Internet

(57) A selection of programs, eg. containing video, music, images, is stored in a database on a server and transmitted over a communications network, typically the Internet, to users on demand. In the embodiment claimed in this application, the user sends a purchase request in respect of the desired items, and is billed in accordance with the request. Free samples of the program contents available on the server may be transmitted to the users to enable them to decide whether to buy a particular program in full.

<PROGRAM FILE>

PROGRAM NAME			REPRO. SEQUENCE
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	OPENING MC (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (MIDI)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MC (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (MOVING PICTURE)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	ENDING MC (AUDIO)

FIG. 3

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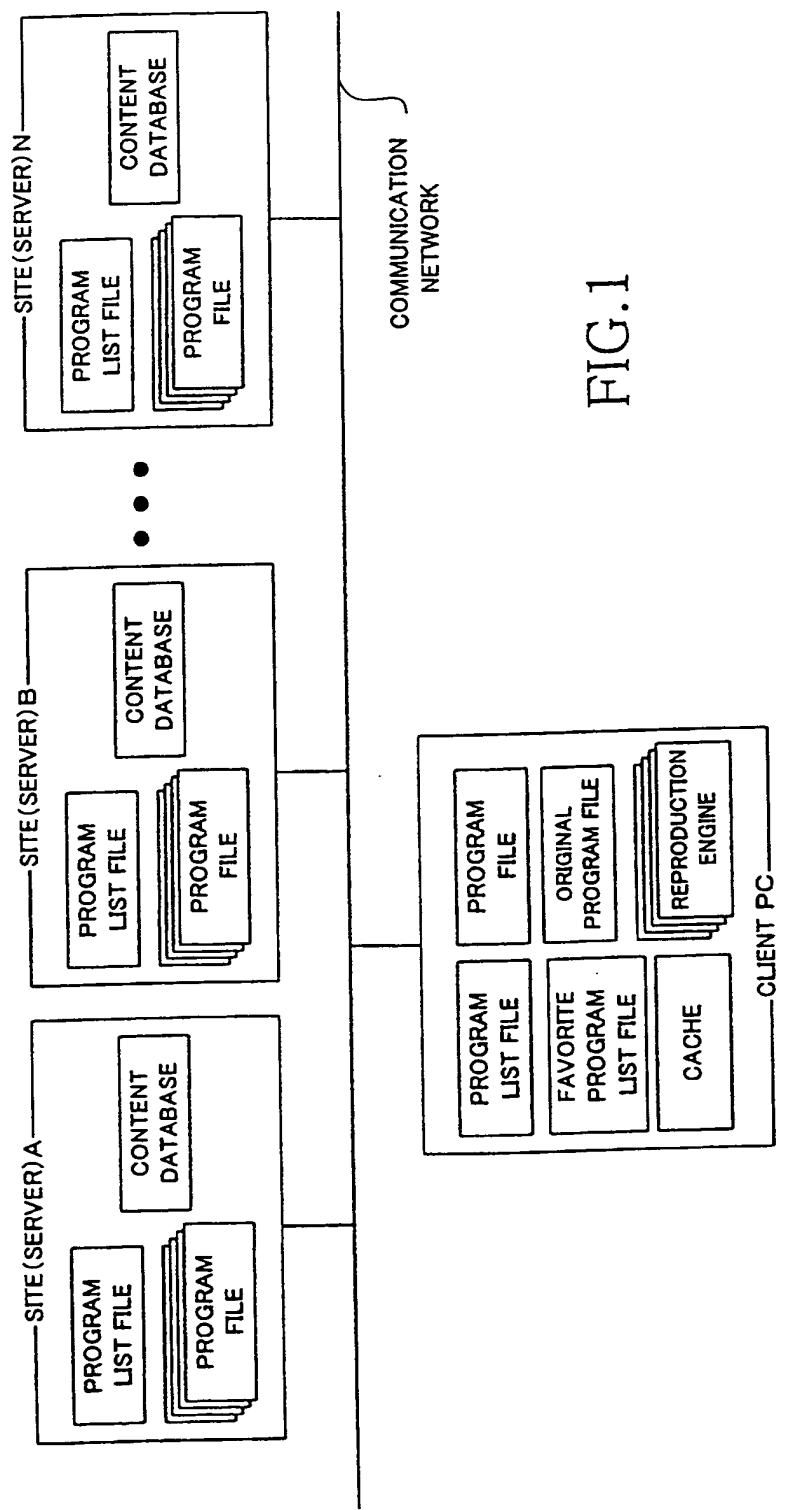


FIG.1

&lt;PROGRAM LIST FILE&gt;

PROGRAM NAME	URL OF PROGRAM FILE
PROGRAM NAME	URL OF PROGRAM FILE
:	:

FIG. 2

&lt;PROGRAM FILE&gt;

PROGRAM NAME			REPRO. SEQUENCE
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	OPENING MC (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (MIDI)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MC (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (AUDIO)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	MUSIC PIECE (MOVING PICTURE)
CONTENT URL	CONTENT ID	BASIC CONTENT INFO.	ENDING MC (AUDIO)

FIG. 3

&lt;OPERATION PANEL&gt;

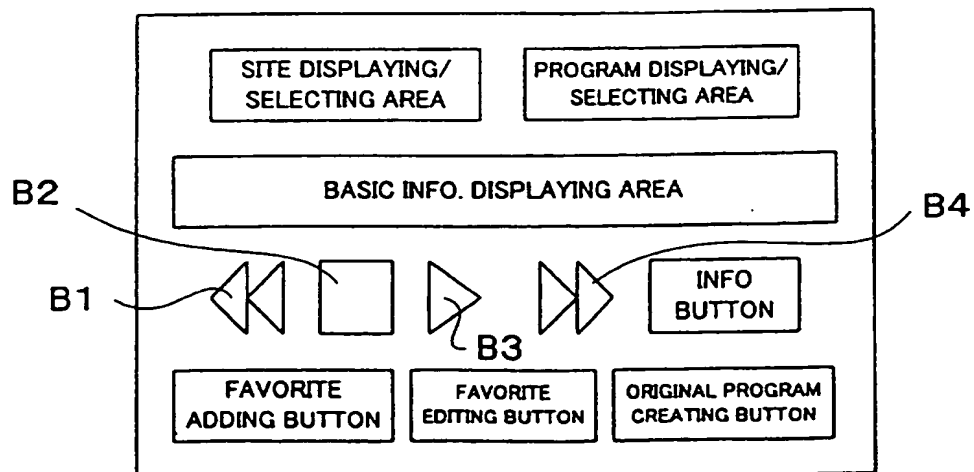


FIG. 4

## &lt;EXAMPLE OF INFORMATION DISPLAY&gt;

FIG. 5

## &lt;PROGRAM FILE&gt;

REPRODUCING  
SEQUENCE OF  
TRACKS

PROGRAM NAME				
TR1	REPRO.TIMIG	CONTENT URL	CONTENT ID	BASIC CONTENT INFO.
	REPRO.TIMIG	CONTENT URL	CONTENT ID	BASIC CONTENT INFO.
	:	:	:	:
TR2	REPRO.TIMIG	CONTENT URL	CONTENT ID	BASIC CONTENT INFO.
	REPRO.TIMIG	CONTENT URL	CONTENT ID	BASIC CONTENT INFO.
	:	:	:	:
:	:			

FIG. 8

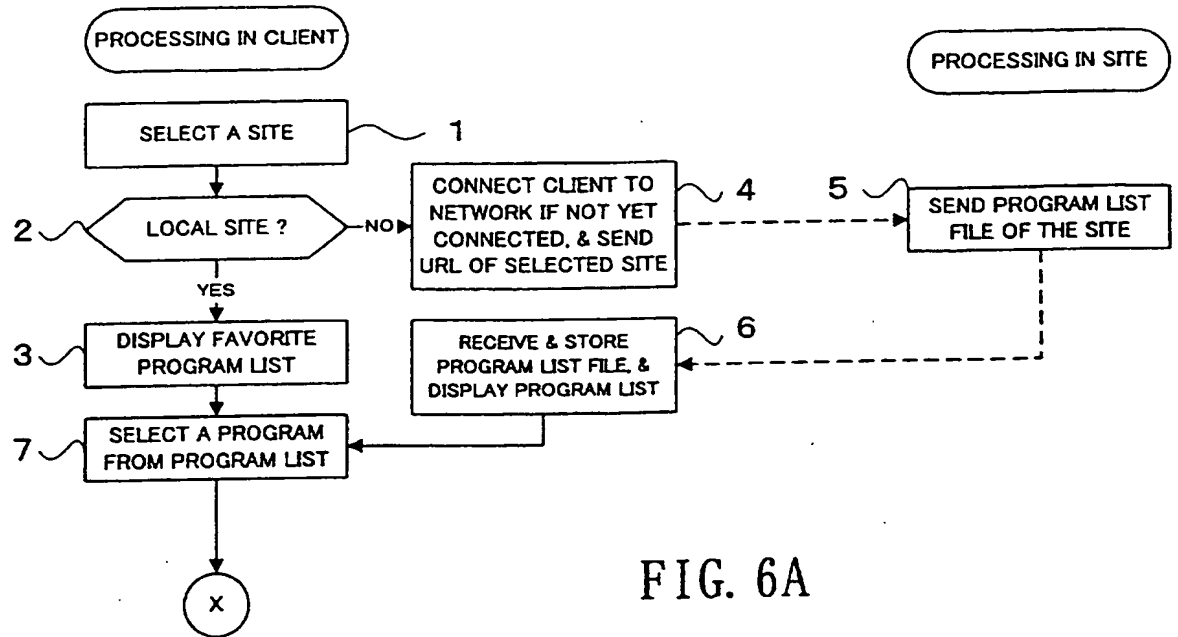
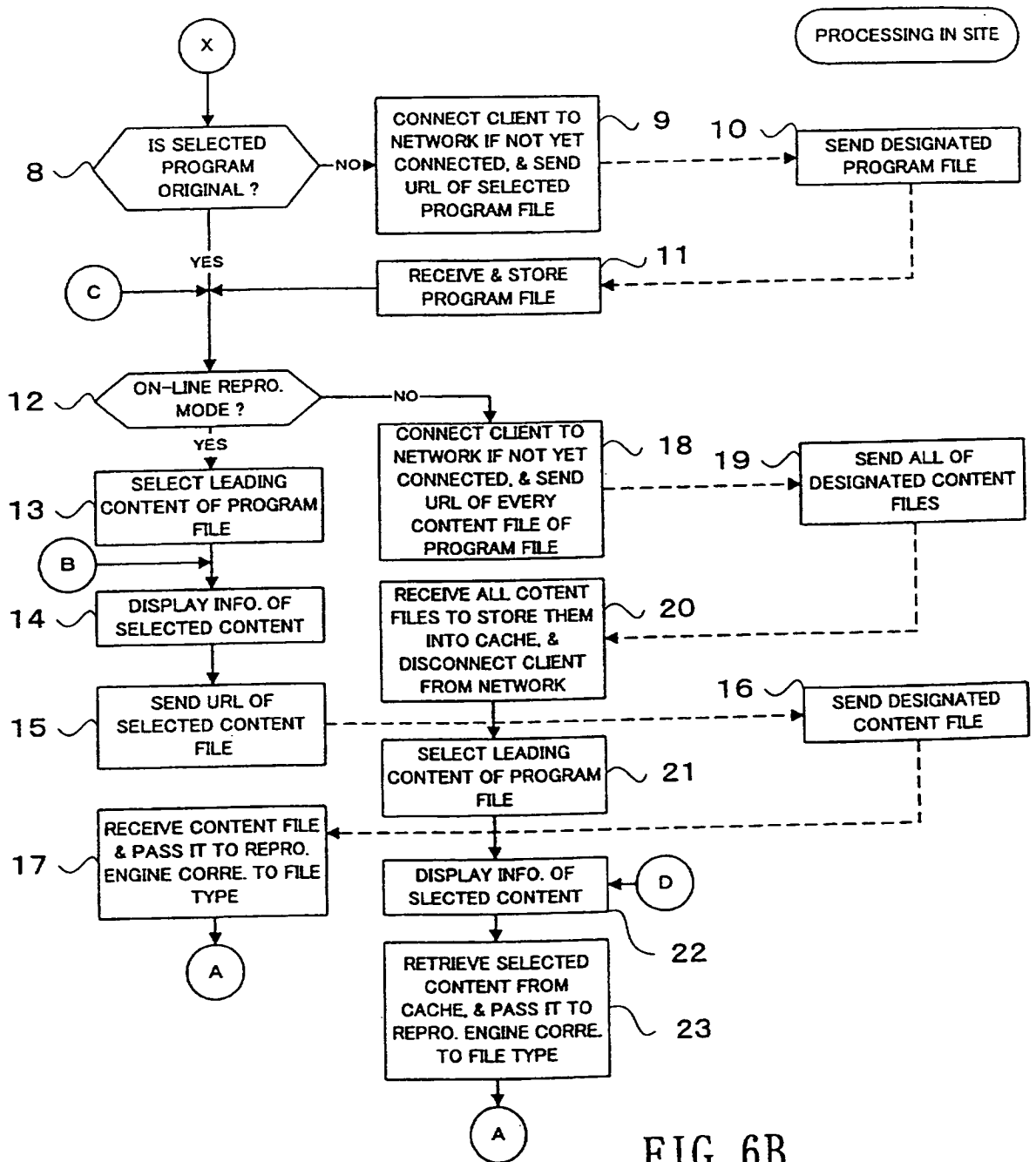


FIG. 6A



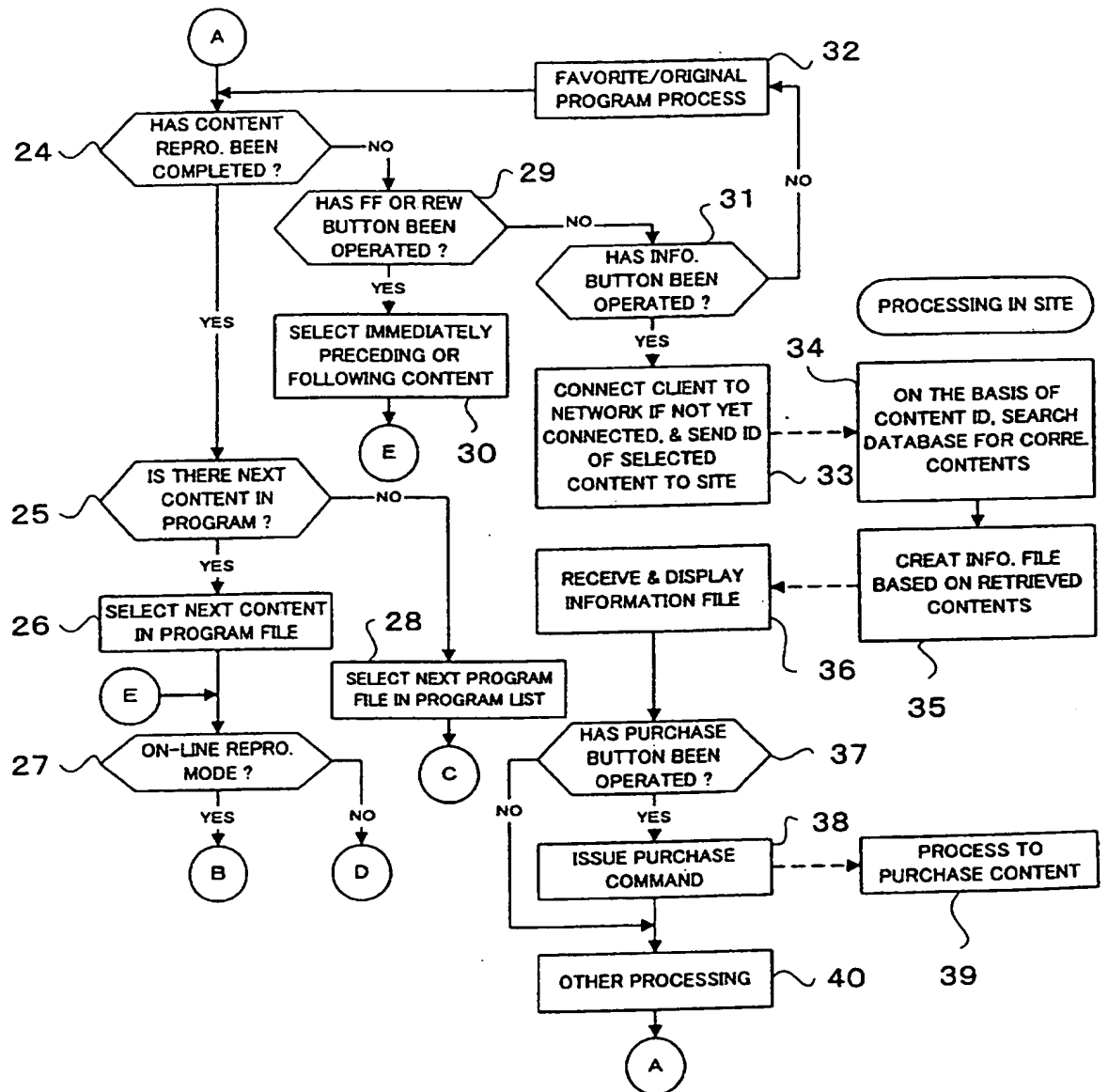


FIG. 6C

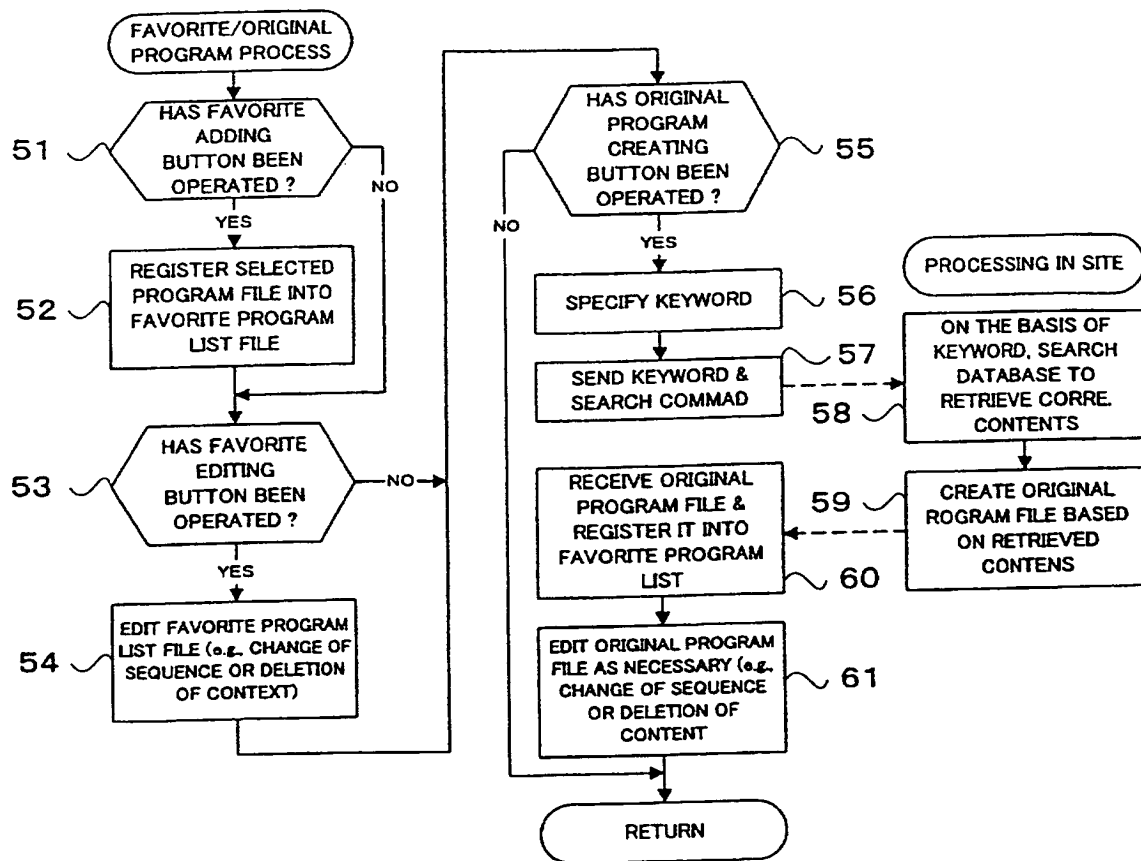


FIG. 7



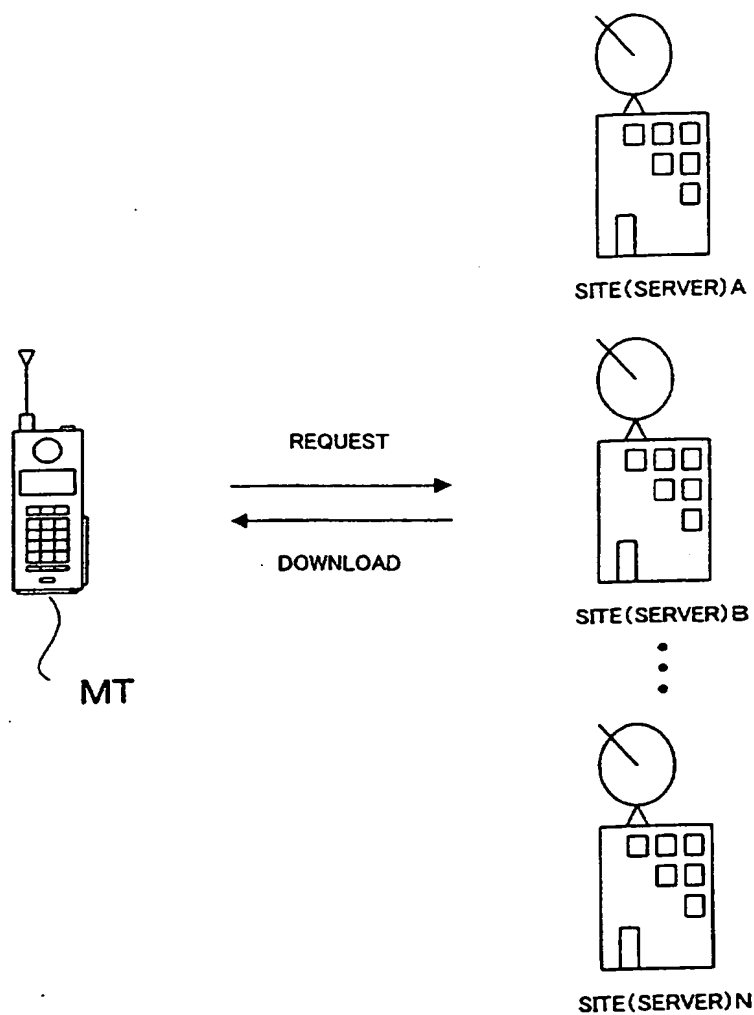


FIG. 9A

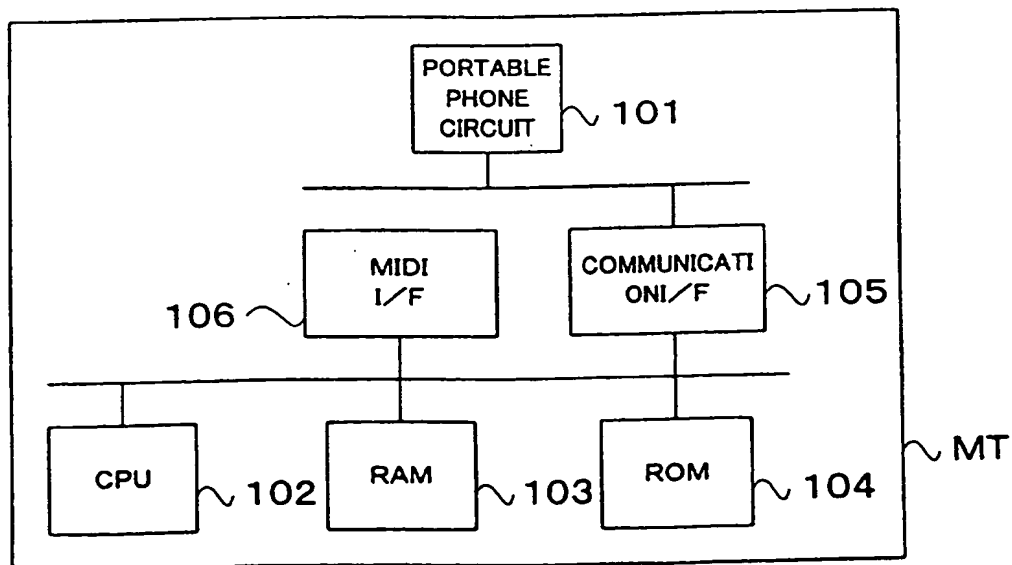


FIG. 9B

## Program Reproduction System and Method Using Communication Network

The present invention relates generally to program reproduction systems and methods for reproducing broadcast programs or other types of programs, each comprised of a set of music and/or picture information, downloaded or distributed via a communication network, and more particularly to an improved program reproduction system and method that are for example capable of reproducing programs comprising a mixture of various contents of different characters.

Typical examples of the conventionally-known systems for distributing broadcast or other types of programs, comprised of music or video data, include radio and television broadcasting systems. However, because radio and television programs are sent unidirectionally from broadcasting stations, interested users or audiences (listeners or viewers) are unable to listen to or view their desired programs at their desired time. Thus, "Internet" broadcasting stations have recently come on the scene as a new form of program distributing facility that is different from the existing radio and television broadcasting stations. The Internet broadcasting stations each distribute any of programs stored somewhere on a communication network, at an interested user's request; that is, on the basis of an interested user's request entered via a terminal (client) such as a personal computer (PC), the client station is connected to a World Wide Web (WWW) server by way of a communication network, such as the Internet, so that the client station is supplied with a program of music piece or video (picture) data stored previously in the WWW server and then reproduces the program on the basis of the received data. Normally, for data distribution using a communication network, each WWW server distributes the data in streams to a client station in such a manner that reproduction of a requested music piece, picture or the like can be initiated before reception of all the necessary data has been completed by the client station. With such an Internet broadcasting station, audiences are allowed to listen to or view any desired programs at any desired convenient time.

Program contents to be distributed via a communication network can be diversified by making programs of a wide variety of contents. For that purpose, the programs have to be made to contain a plurality of contents having different characters (e.g., different data formats) in a mixed fashion. However, with the above-mentioned Internet broadcasting stations, all the contents in each one of the programs are

arranged to have a same character (same data format). Namely, the Internet broadcasting stations today can not provide programs of diversified contents due to the fact that the conventionally-known program reproduction systems used in connection with the Internet broadcasting stations and the like are unable to reproduce programs containing a plurality of types of contents having different characters in a mixed fashion (e.g., programs which comprise a mixture of plural types of contents prepared in different data formats, such as contents of MIDI music performance information, audio sounds and pictures).

Further, with the conventionally-known program reproduction systems, interested users can not freely enjoy a distributed program by fast-forwarding/fast-rewinding a desired content within the program. Further, interested users can not purchase a desired content of the distributed program. In addition, interested users can not create their own original program by optionally combining a plurality of contents of the distributed program. Besides, interested users are unable to view information pertaining to and descriptive of sequentially reproduced contents (i.e., content-related information) separately on a content-by-content basis.

The present invention seeks to provide a program reproduction system and method which are capable of appropriately reproducing a program that comprises various types of contents of different characters in a mixed fashion.

The present invention also seeks to provide a program reproduction system and method which allow a user to fast-forward or fast-rewind a desired content within a program even during reproduction of the program.

Furthermore, the present invention seeks to provide a program reproduction system and method which allow an interested user to purchase any desired content reproduced thereby.

The present invention also seeks to provide a program reproduction system and method which allow a user to create an original program.

Furthermore, the present invention seeks to provide a program reproduction system and method which allow a user to view various information pertaining to and descriptive of contents sequentially reproduced within a program.

To accomplish the above-mentioned objects, there is provided, according a first aspect of the present invention, a server apparatus connectable to a client terminal apparatus via a communication network, said server apparatus comprising:

5 first storage means for storing a program list file for prompting a client to select a program;

second storage means for storing, for each program, a program file defining a reproducing sequence of a plurality of items of contents information including different types of contents;

10 first supply means for supplying said client terminal apparatus with the program list file stored in said first storage means;

reception means for receiving a result of program selection by said client terminal apparatus based on the program list file supplied by said first supply means; and

15 second supply means for, on the basis of the program selection by said client terminal apparatus, supplying said client terminal apparatus with one of the program files stored in said second storage means, to thereby allow said client terminal apparatus to reproduce the contents information in accordance with the reproducing sequence defined by the program file.

According to the primary aspect of the present invention, the program file only includes information that defines a reproducing sequence of a plurality of contents  
20 constituting a program such as an Internet-broadcast program or other type of network-distributed program; that is, the program file itself does not include such contents. The individual contents specified by this program file are retrieved one by one from the memory (i.e., content database) of the program serving site, in response to a request given from the client. Thus, even for a given program comprising a plurality of  
25 contents that differ in their type, i.e., data format, a program file corresponding to the given program can be readily made by merely combining these contexts. The client or client station, on the other hand, includes a plurality of types of reproduction engines provided in corresponding relation to and capable of reproducing the plurality of types of contents having different characters. Thus, the client station can reproduce each of the  
30 contents, selectably using any one of the reproduction engines which corresponds to the type of the content to be reproduced. Consequently, even where various types of contents having different characters are mixedly included in a program file, these contents in the

program file can be reproduced appropriately by the client using the different reproduction engines as appropriate. Therefore, according to the first aspect of the present invention, it is possible to readily create and then appropriately reproduce a program comprising a mixture of various types of contents having different characters, such as  
5 contents of music performance information in the form of MIDI data, contents of talk or other sound information in the form of audio data, and contents of picture information in the form of video data. As a result, the present invention provides for creation and reproduction of programs having greatly diversified contents.

In one preferred implementation of the present invention, the program serving site  
10 is capable of supplying a plurality of program files, and the client is adapted to selectively designate a desired one of the plurality of program files and receive the designated desired program file from the program serving site. Further, the client may be adapted to selectively designate a desired one of the plurality of program files and make a program list containing the designated desired program file. Thus, an interested user is allowed to  
15 readily select any desired program.

According to a second aspect of the present invention, there is provided a client terminal apparatus for receiving contents information via a communication network, said client terminal apparatus comprising:

first reception means for receiving, from a server connected to the communication  
20 network, a program list file for prompting said client terminal apparatus to select a program;

selection means for selecting a program on the basis of the program list file received by said first reception means;

transmission means for transmitting, to said server, a result of program selection by  
25 said selection means;

second reception means for receiving, from said server, a program file that corresponds to the result of program selection by said client terminal apparatus and defines a reproducing sequence of a plurality of items of contents information including different types of contents; and

30 third reception means for receiving, via the communication network, the contents information defined by the program file received by said second reception means.

According to a third aspect of the present invention, there is provided a system comprising a server and a client terminal connectable with each other via a communication network so that contents information is received by said client terminal,

(a) said server comprising:

5 means for transmitting a program list file indicative of selectable programs to said client terminal;

storage means for storing, for each of the programs, a program file defining a reproducing sequence of a plurality of items of contents information including different types of contents; and

10 supply means for, in response to selection of a program in said client terminal, supplying said client terminal with one of the program files stored in said storage means,

(b) said client terminal comprising:

means for receiving the program list file from said server;

selection means for selecting a program on the basis of the received program list file;

15 transmission means for transmitting, to said server, a result of program selection by said selection means;

reception means for receiving one of the program files supplied by said server in accordance with the result of program selection transmitted by said transmission means; and

20 means for receiving the contents information defined by the program file received by said reception means. The client or client station is allowed to not only reproduce a program made up of a plurality of contents but also fast-forward or fast-rewind (fast-reverse) the progression of the program by fast-forwarding or fast-rewinding a content being currently reproduced. As noted earlier, the program serving site stores  
25 therein a program file corresponding to a program to be distributed, as well as contents constituting the program with each content as a separate data group. In the reproducing sequence or order defined by the program file, the client receives or acquires the contents from the program serving site and reproduces the received contents. For example, when  
30 an instruction to fast-forward or fast-rewind a specific content of a currently-reproduced program is given, the client acquires another content that precedes or follows the specific content in the reproducing sequence defined by the program file, in response to the

instruction. This way, the client can reproduce the program while fast-forwarding or fast-rewinding a selected content or contents.

In one preferred implementation, the client includes an operator and a processor coupled with the operator, and the processor is adapted to, in response to an operation of the operator, edit the reproducing sequence of the contents in the program file received from the program serving site. The editing may be made such as by changing the reproducing sequence of the contents in the received program file or deleting any of the contents. With this arrangement, the user, i.e., listener or viewer, is allowed to readily change the reproducing sequence of the contents in the received program file or delete any of the contents as desired.

In one preferred implementation of the present invention, the program file contains identification information identifying the individual contents, and the client receives the content-related information from the program serving site on the basis of the identification information of the currently reproduced content.

Various information pertaining to contents to be sequentially reproduced (content-related information) can be visually presented on the display section. The content-related information for the individual contents prestored in the memory (content database) may be stored in a suitable memory or incorporated in a program file on the side of the program serving site. When the client receives given contents from the program serving site or is in the process of reproducing a specific content, the content-related information for each received content or each currently reproduced content is visually displayed on the display section. In the case where such content-related information is stored in the memory of the program serving site, the client acquires the content-related information from the memory of the program serving site. In the case where such content-related information is incorporated in the program file received by the client, on the other hand, the content-related information is read out from the received program file and displayed on the display section. In this way, the client can reproduce the program while displaying the content-related information descriptive of the program.

Any interested user of the client station is allowed to purchase any desired content of a program which he or she is listening to or viewing. For this purpose, the user manipulates the operator to issue, to the program serving site, a content purchase request asking for the desired content. Upon receipt of such a content purchase request from the

client, the program serving site carries out a predetermined process to sell the requested content to the client. Because, in the present invention, the individual contents are prestored in the memory (content database) of the program serving site separately from the program file and separately from each other-instead of each program made up of a plurality of contents being prestored in its entirety as a single set of data-, the client can acquire each individual content separately from the program serving site. As a result, the client allows the user to selectively purchase only a desired one of the contents of the program.

In one preferred implementation of the present invention, the client generates a content purchase request asking for one of the contents which is being currently reproduced and transmits the content purchase request to the program serving site. In response to the content purchase request from the client, the program serving site performs the selling process to sell the client a regular (i.e., non-sample) content corresponding to the content being currently reproduced by the client.

In one preferred embodiment of the present invention, the program serving site supplies the client with a predetermined sample content in response to a content purchase request from the client asking for any one of the contents specified by the program file. Then, for each of the contents having been finally determined to be sold via the selling process, the program serving site supplies the client with a non-sample regular content.

In one preferred implementation of the present invention, the program file contains storage location information that is indicative of a storage location of each of the contents in the program serving site, and the client receives a desired one of the contents from the program serving site on the basis of such storage location information.

The present invention may be constructed and implemented not only as the system or apparatus invention as set out above but also as a method invention. The present invention may also be embodied as a program for execution by a processor such as a computer or DSP, and as a storage medium storing such a program. Further, the present invention may be implemented as a storage medium storing program files of a novel construction.

According to a fourth aspect of the present invention, there is provided a method for supplying information to a client terminal by a server connectable to said client terminal via a communication network, said server including a memory for storing, for



each program, a program file defining a reproducing sequence of a plurality of items of contents information including different types of contents, said method comprising:

a step of supplying said client terminal with a program list file for prompting said client terminal to select a program;

5 a step of receiving a result of program selection by said client terminal based on the program list file supplied by said step of supplying; and

a step of, on the basis of the result of program selection, supplying said client terminal with one of the program files stored in said memory, to thereby allow said client terminal to reproduce the contents information in the reproducing sequence defined by the program

10 file.

According to a fifth aspect of the present invention, there is provided a method for receiving contents information by a client terminal via a communication network, said method comprising:

a step of receiving, from a server connected to the communication network, a program  
15 list file for prompting said client terminal to select a program;

a step of accepting a selection of a program on the basis of the program list file received by said step of receiving;

a step of transmitting, to said server, a result of program selection by said step of selecting;

20 a step of receiving, from said server, a program file that corresponds to the result of program selection and defines a reproducing sequence of a plurality of items of contents information including different types of contents; and

a step of receiving, via the communication network, the contents information defined by the program file received from said server.

25 According to a sixth aspect of the present invention, there is provided a method for, in a system comprising a server and a client terminal connectable with each other via a communication network, causing said client terminal to receive contents information via the communication network, said server including a memory for storing, for each program, a program file defining a reproducing sequence of a plurality of items of  
30 contents information including different types of contents, said method comprising:

a first step of causing said server to supply said client terminal with a program list file indicative of selectable programs;

a second step of causing said client terminal to select a program on the basis of the program list file supplied by said server;

a third step of causing said client terminal to transmit, to said server, a result of program selection by said client terminal;

5 a fourth step of causing said server to supply said client terminal with one of the program files stored in said memory, on the basis of result of program selection;

a fifth step of causing said client terminal to receive the program file supplied by said server; and

10 a sixth step of causing said client terminal to receive, via the communication network, the contents information defined by the program file received from said server.

For better understanding of the object and other features of the present invention, its preferred embodiments will be described in greater detail hereinbelow with reference to the accompanying drawings, in which:

15 Figure 1 is a block diagram showing a general hardware set up of a program reproduction system in accordance with a preferred embodiment of the present invention;

Figure 2 is a conceptual diagram explanatory of an example of a program list file employed in the program reproduction system of Figure 1;

20 Figure 3 is a conceptual diagram explanatory of an example of a program file employed in the program reproduction system of Figure 1;

Figure 4 is a block diagram conceptually showing an example of an operation panel;

Figure 5 is a conceptual diagram showing an example of an information display made in the program reproduction system;

25 Figures 6A to 6C are flow charts showing an example of program reproduction processing that is performed in the program reproduction system of the present invention;

Figure 7 is a flow chart showing an example of a favorite/original program process performed in the program reproduction system;

Figure 8 is a conceptual diagram showing an example of a program file which is

arranged to allow a plurality of contents to be reproduced concurrently in a parallel fashion;

Figure 9A is a diagram showing an example where a client station is a portable-type communication terminal; and

Figure 9B is a block diagram showing an exemplary inner structure of the portable-type communication terminal having a tone generating function.

Figure 1 is a block diagram showing a general hardware set up of a program reproduction system in accordance with a preferred embodiment of the present invention. The program reproduction system of Figure 1 includes a plurality of sites (i.e., program serving sites or servers) A - N, a client (i.e., client station) PC and a communication network X connecting the program serving sites (servers) A - N and client station PC. Each of the sites (servers) A - N and client station PC comprises a computer including a CPU, ROM, RAM, hard disk, modem, etc. (all not shown) and can independently transmit and receive data (e.g., contents of an Internet-broadcast or other type of distributed program) via the communication network X. Namely, the client station PC is connectable any desired one of various communication networks X, such as a LAN (Local Area Network), Internet and telephone line network, for transmission/reception of various data to/from any one of the program serving sites or servers A - N. Although the program reproduction system of the present invention may include other hardware than the above-mentioned, it will be described hereinafter only in relation to a case where minimum necessary resources are employed. Note that the communication network X may be of the wireless type rather than the wire-connected type. Further, a plurality of clients (i.e., client stations) PC may be connected to the communication network X.

In the preferred embodiment, each of the independent sites A - N may be constructed substantially similarly to a radio or television broadcasting station, and a great number of program files are prestored in a program storage section or area of each of the sites A - N. Each of the program files, which corresponds generally to a radio, television program, comprises a time-serial combination of various contents such as MIDI files in the form of music piece data, audio files in the form of data relating to sounds or voices of the music piece or master of ceremonies (MC) and moving or still picture files in the form of video data, as will be later described in detail. The program contents, such as the

MIDI, audio, moving picture and still picture files (content files), are prestored in content databases (storage sections) of the individual program serving sites A - N, along with a multiplicity of other contents to be used for other purposes than the program distribution. All the program files stored in the individual program serving sites A - N can be identified by means of a program list file.

The client station PC can select any one of the program serving sites A - N and then select any one of the program files for reproduction. More specifically, the client station PC first receives (obtains or acquires) a program list from the selected site A - N to store it in memory as a program list file. Then, the client station PC selects any one of the programs on the program list and obtains a corresponding program file from the selected site A - N to store it in memory. After that, the client station PC selects and obtains program contents (files) from the selected site A - N and reproduces the obtained program contents by means of a reproduction engine. The embodiment can use two reproduction modes, i.e., an "on-line reproduction mode" and an "off-line reproduction mode". In the "on-line reproduction mode", desired program contents are obtained from the selected site A - N and reproduced on a real-time basis. In the "off-line reproduction mode", program contents designated by the program file are obtained collectively and then reproduced after being temporarily stored in a cache memory. Further, as will be later described in detail, an interested user can register his or her favourite program in a favourite program file and also create his or her own original program. These pieces of information are stored into the client station PC as a favourite program list file and original program file. Note that the client station PC includes storage sections or storage areas provided in corresponding relation to the above-mentioned files.

Now, a brief description will be given about specific examples of the program list file and program file, with reference to Figures 2 and 3. Specifically, Figure 2 is a conceptual diagram explanatory of an example of the program list file, while Figure 3 is a conceptual diagram explanatory of an example of the program file.

The program list file is a collection of data indicating a list of programs prestored in the individual program serving sites A - N and includes program names and URLs (Uniform Resource Locators) of program files, as shown in Figure 2. Each of the program names represents a unique name or title assigned to one particular program, and each of the URLs of the program files represents a location in the site where one

particular program file is stored and is uniquely assigned to the program file. For instance, each of the URLs is an address (e.g., Internet address) assigned to a particular program file stored in one of the sites on the communication network X so that access to the particular program file can be made from the client station PC and another one of the sites A - N.

In each of the program files, there is stored content information, such as MIDI, audio, moving picture and still picture files, in a predetermined sequence of the program progression or reproduction. For instance, in the case of a given program made up of an opening MC (audio file), first music piece (MIDI file), MC (audio file), second music piece (MIDI file), third music piece (moving picture file) and ending MC (audio file), respective content information is stored in the program file in the mentioned order of the files, as illustratively shown in Figure 3. The program file is a collection of data indicating all the content information contained in one particular program, which includes content information consisting of a set of a "program name", "content URLs", "content IDs" and "basic content information". The program name is a unique name or title of one particular program similarly to the program name in the program list file. Each of the content URLs is information designating a location in which one particular program file is stored, each of the content IDs is information identifying one particular content, and each of the basic content information is descriptive of basic details of one particular program (such as a lyric writer, composer, player, etc. if the content concerns a music piece, or descriptive of a master of ceremonies if the program concerns an MC's speech. Further, the favourite program list file is constructed in a similar manner to the above-mentioned program list file, and the original program file is constructed in a similar manner to the above-mentioned program file.

Note that in the case where a music piece is stored as a moving picture file as with the third music piece in the program file of Figure 3, video data of moving and/or still pictures, rather than the music piece data alone, are recorded (e.g., a promotion video).

The following paragraphs describe an operation panel that is used in the inventive program reproduction system and can be operated by a user to reproduce a desired program. Figure 4 is a block diagram conceptually showing an example of the operation panel, which is provided on the client station PC so that a user can perform various operations such as ones for reproducing a desired program.

In a "site displaying/selecting area" of the operation panel of Figure 4, a list of the program serving sites A - N is displayed so that the user can select any desired one of the displayed sites A - N. In a "program displaying/selecting area" of the operation panel, program names specified by a program list file stored in the selected site are displayed so that the interested user can select any desired one of the displayed programs. In a "basic information displaying area" of the operation panel, various basic information is displayed which pertains to a program content being currently reproduced (i.e., basic content information of a program file). Double-triangle button B1 pointing leftward is an REW button for fast-rewinding or fast-reversing a currently reproduced content, and a double-triangle button B4 pointing rightward is an FF button for fast-forwarding a currently reproduced content. Single-triangle button B3 pointing rightward is a playback button for reproducing a content, and a square button B2 is a stop button for stopping reproduction of a content being reproduced. INFO button is a button for displaying later-described information. Favourite adding button is a button for adding a currently reproduced program to the favourite program list file, and a favourite editing button is a button for displaying a favourite list editing screen (not shown) to allow the user to edit the favourite program list file. Original program editing button is a button for displaying an original program creating screen (not shown) to create/edit the original program file.

Although not specifically shown in Figure 4, the operation panel also includes a picture display area for displaying moving and still pictures.

In response to a user operation or activation of the INFO button, various information is displayed in a manner as shown in Figure 5. In the described embodiment, information pertaining to a picture is displayed in the left half of the screen and information pertaining to program contents is displayed in the right half of the screen. The information pertaining to program contents includes music-piece-related information such as MIDI and audio files. More specifically, the name or title, genre, player, lyric writer, composer, label, file type, playing time, etc. of the music piece are displayed in response to the activation of the INFO button. Also displayed is a price at which the music piece (contents) can be purchased. Each program content can be purchased on line by any interested user or audience by activating a "purchase button". Techniques relating to the online content purchase are well known and thus are not described here.

Figures 6A to 6C are flow charts showing an example of program reproduction processing that is performed in the program reproduction system of the present invention. Specifically, Figures 6A, 6B and 6C show former, intermediate and latter portions, respectively, of the program reproduction processing.

5        At step 1 of Figure 6A, the user selects any one of the program serving sites displayed in the site displaying/selecting area on the operation panel (see Figure 4) installed on the client station PC, in order to reproduce a desired program distributed from the selected site. The sites selectable here include not only the plurality of sites A - N on the communication network X but also a local site (namely, the client station PC). When  
10       the local site has been selected (YES determination at step 2), programs names registered in the favourite program list file are displayed, at step 3, in the program displaying/selecting area on the operation panel. When, on the other hand, one of the networked sites A - N has been selected (NO determination at step 2), the URL of the selected site A - N is sent onto the communication network X at step 4. If the client  
15       station PC is not yet connected to the communication network X at that time, then it is connected to the communication network X by a dial-up connection or the like. Assuming that the site A has been selected by the user of the client station PC at step 4, the selected site A sends its program list file to the client station PC at step 5. The client station PC receives the program list file from the selected site A and stores the list file into  
20       its program list storage section. Then, at step 6, the client station PC displays programs names contained in the stored program list file in the program displaying/selecting area on the operation panel. At next step 7, the interested user can select any one of the programs from the program name list.

      Once any one of the programs has been selected by the user, a determination is  
25       made as to whether or not the selected program is a user's original program at step 8 of Figure 6B. If the selected program is an original program (YES determination of step 8), the client station PC jumps to step 12 because the program file is already stored in the client station PC and thus there is no need to acquire any program file from the site A. If answered in the negative at step 8, i.e., if the selected program is not an original program,  
30       the client station PC sends the URL of the selected program file to the communication network X in order to acquire the program file from the site A at step 9. If, at that time, the client station PC is not connected to the communication network X (i.e., when the

local site has been selected at step 2), then the client station PC is connected to the communication network X. Thus, the program serving site A sends the program file designated by the URL to the client station PC, at step 10. The client station PC receives the program file from the site A and stores it into its program file storage section at step 11. In this way, the interested user can select any desired one of a multiplicity of programs.

After that, program contents are reproduced, in accordance with the selected original program file or acquired program file, in either the on-line reproduction mode or the off-line reproduction mode. The on-line reproduction mode is one selected by an user having his or her client station PC always connected to the communication network X, while the off-line reproduction mode is one selected by an user having his or her client station PC connected to the communication network X by a dial-up connection only when necessary. In the on-line reproduction mode, necessary contents of a program are acquired one by one in real time from the program serving site A whenever the program contents are to be reproduced. In the off-line reproduction mode, on the other hand, all contents of a desired program to be reproduced are acquired collectively from the site A, so that the off-line reproduction mode can significantly reduce the length of the time period when the client station PC has to remain connected to the communication network X. By contrast, the on-line reproduction mode can reduce the waiting or latency time before the content reproduction is initiated and thereby greatly enhance the real-time reproducibility due to the fact that each necessary program content is acquired in real time.

When the program reproduction system is in the on-line reproduction mode as determined at step 12, the reproduction system behaves as follows. In this case, the client station PC automatically selects first or leading content information within the program file, at step 13. Then, at step 14, the client station PC displays basic content information in the basic information displaying area on the operation panel. Although various other information is received or acquired from the program serving site A and then visually displayed, this basic content information is already stored in the program file and hence need not be acquired from the site A each time it is to be displayed, so that the network traffic can be effectively alleviated. After the display, the URL of the selected content information is sent out to the site A at step 15, in response to which the site A sends the



corresponding content file at step 16. Then, at step 17, the client station PC receives the content file from the site A and passes it to one of reproduction engines (i.e., dedicated hardware devices or software programs for performing a necessary reproduction process) which corresponds to the type of the file, such as the MIDI, audio, moving picture or still picture, to start the content reproduction.

When the program reproduction system is in the off-line reproduction mode (NO determination at step 12), the system behaves as follows. First, the URL of every content information within the program file is sent from the client station PC to the program serving site A, which in turn sends all of the thus-designated content files to the client station PC at step 19. Here, the order in which the content URLs are sent from the client station PC and the content files are sent from the site A need not necessarily agree with an actual reproducing sequence of the contents in the program. If the client station PC is not connected to the communication network X at that time, the client station PC is connected to the communication network X. The client station PC receives all the content files from the site A and then is disconnected from the communication network X. The received content files are stored into a cache memory at step 20. Then, the client station PC selects first or leading content information within the program file at step 21, displays the basic content information at step 22, and passes each of the content files to one of the reproduction engines which corresponds to the type of the file, such as the MIDI, audio, moving picture or still picture, to start the content reproduction at step 23.

Whereas the client station PC in the preferred embodiment has been described as collectively receiving all contents of a program in the off-line reproduction mode, the present invention is not so limited, and the client station PC may collectively receive all contents of all programs or only designated ones of the programs present in the selected site, in which case the user is allowed to reproduce a plurality of programs in succession by being connected to the communication network only once. Further, although the client station PC in the preferred embodiment has been described as reproducing contents after having downloaded contents files to be reproduced, the client station PC may reproduce the contents immediately as the content files are distributed in streams.

Once the content reproduction has been initiated at steps 17 and 23, the client station PC proceeds to step 24 of Figure 6C, where a determination is made as to whether the content reproduction has been completed or not. If the content reproduction has been

completed (YES determination at step 24), it is further determined at next step 25 whether there is next or other content information in the program file. If answered in the affirmative at step 25, that content information is selected at step 26. Then, if the on-line reproduction mode is on (YES determination at step 27), the client station PC reverts to  
 5 step 14, but if the off-line reproduction mode is on (NO determination at step 27), the client station PC reverts to step 22. If there is not next or other content information in the program file (NO determination at step 25), a next program file within the program list file is selected at step 28, and the client station PC reverts to step 12. In this way, a plurality of programs can be reproduced one after another. Note that if there is not a next  
 10 program file within the program list file as determined at step 28, this means that reproduction of all the contents in the program has been completed, and thus the program reproduction processing of Figures 6A to 6C may be terminated or the leading program file in the program list may be again selected.

At step 29 of Figure 6C, a determination is made as to whether the fast-forwarding  
 15 (FF) button or fast-rewinding (REW) button has been operated or activated during the content reproduction. If the fast-forwarding (FF) button has been activated as determined at step 29, the client station PC, at step 30, selects other content information immediately following the content being currently reproduced within the program file, or if the fast-rewinding (REW) button has been activated, the client station PC, at step 30, selects  
 20 other content information immediately preceding the currently reproduced content. After step 30, the client station PC reverts to step 27. This way, the user is allowed to skip a non-favourite music piece or listen to a currently-reproduced music piece more than once unlike with an ordinary radio or television program.

When the INFO button has been activated as determined at step 31, the client  
 25 station PC sends the content ID of the selected program file to the program serving site A at step 33. If the client station PC is not connected to the communication network X at that time, the client station PC is connected to the communication network X. Upon receipt of the content ID from the client station PC, the site A, at step 34, searches through the content database for content files corresponding to the content ID. For instance, if the  
 30 content ID of a MIDI music piece has been received, the site A searches for audio contents, still picture contents (e.g., a photograph on a CD jacket), miscellaneous information contents (e.g., name, genre, player, lyric writer, composer, label, playing time

length, purchase price, etc. of the music piece), music score contents and the like. Then, the site A creates an information file on the basis of the searched content files and sends the thus-created information file to the client station PC at step 35. The client station PC receives the information file from the site A and visually displays it at step 36.

5           As noted earlier, the purchase button is displayed on an information displaying screen of Figure 5. By activating the purchase button to purchase a desired content such as a MIDI music piece file (YES determination at step 37), the user is allowed to purchase the desired content and other contents related to the desired content such as an audio content file and music score content file. For that purpose, the client station PC sends a  
10           purchase command and the content ID of the desired content to the site A at step 38, in response to which the site A, at step 39, carries out a process pertaining to the requested purchase of the desired content and other contents related to the desired content. Note that the contents acquired for reproduction within the program and the contents purchased here may be in the following relationship. For example, the contents acquired for  
15           reproduction within the program may be those covering just a part of a music piece or low-quality sample contents, while the contents purchased here may be those covering the whole of the music piece or high-quality contents. Then, at step 40, other processing is carried out irrespective of whether the purchase button has been activated or not. The other processing of step 40 includes various operations pertaining to information to be  
20           displayed in response to a user selection (mouse-clicking) on the information displaying screen; for example, when the item "player" has been selected, step 40 searches for and displays a content pertaining to the player. After completion of the other processing, the client station reverts to step 24.

          The above-mentioned information-displaying and content purchasing operations  
25           are carried out in the same manner for both the program supplied from the site A and the favourite or original program stored locally. Further, these information-displaying and content purchasing operations are carried out even with the FF or REW button activated. Thus, any interested user can acquire information and contents of any desired music piece at any desired time.

30           When the user has activated the favourite adding button, favourite editing button or original program creating button without activating the INFO button as determined at step 31, a favourite/original program process is performed at step 32.

Figure 7 is a flow chart showing an example of the favourite/original program process. When the favourite adding button has been activated as determined at step 51, a currently-selected program file is registered into the favourite program list file at step 52; that is, the program name and URL of the selected program file are additionally registered. When the favourite editing button has been activated and thus an YES determination has been made at step 53, the favourite program list file is edited at step 54; for example, at this step 54, the sequence of the programs in the favourite program list is changed, or a selected one or more of the programs is deleted. The editing of the favourite program list file is carried out by visually showing an editing screen (not shown) on the display to permit desired editing operations by the user utilizing the screen.

Further, when the original program creating button has been activated and thus an YES determination has been made at step 55, the client station PC goes to step 56, where are specified one or more keywords pertaining to a content to be stored as an original program. For example, the player's name, musical genre, etc. may be designated as the keywords. Then, at step 57, the client station PC sends the specified keywords and a search command to the site A. On the basis of the keywords, the site A searches through the content database corresponding contents and lists up and the corresponding contents at step 58. Then, at step 59, the program serving site A creates an original program file based on the listed contents and sends the thus-created original program file to the client station PC. Similarly to ordinary program files, the original program file includes content URLs, content IDs and basic content information; note that the contents in the original program file are arranged in a predetermined order, such as English or Japanese alphabetical order or order in which they have been found. Then, the client station PC receives the original program file from the site A and registers it into the favourite program list at step 60. Then, the user can edit the original program file as necessary at step 61; for example, the user changes the sequence of the contents or deletes a selected one or more of the contents. If a new original program is created in the site A, then the old original program file stored in the client station PC may be discarded, or only new contents may be added to the existing original program file. Alternatively, a plurality of such original program files may be stored.

Although the processing of Figure 7 has been described to create an original program file by arranging, in a predetermined order, contents listed through a search by

the site A, only desired ones of the listed contents may be designated by the client station PC so that the site A can create an original program file of the client-designated contents alone. Further, the program editing function may be possessed by the site A rather than the client station PC; in such a case, an editing command is issued from the client station PC, on the basis of which the site A performs editing to change the sequence of the contents and/or delete a selected one or more of the contents.

Although not specifically shown in the above-described processing flows of Figures 6A - 6C and 7, reproduction of any content can be stopped compulsorily by activating the stop button of Figure 4 and can be resumed by again operating the stop button. Further, arrangements may be made to optionally terminate the above-described operations by the user giving an instruction.

In the above-described program reproduction system, each program is caused to progress by reproducing contents sequentially one after another. Namely, because of the sequential or successive arrangement of contents in a program (program file), these contents can not be reproduced concurrently in a parallel fashion. However, the present invention is not so limited, and programs (program files) may be constructed in such a manner that a plurality of contents can be reproduced concurrently in a parallel fashion. Such an arrangement permits program making which can reproduce a MIDI music piece at the same time an audio MC speech file is reproduced, or reproduce a MIDI music piece while switching one still picture to another as a background picture.

Figure 8 is a diagram showing an example of a program file which is arranged to allow a plurality of contents to be reproduced concurrently in a parallel fashion. As shown, each program consists of a plurality of tracks which correspond to various different types of content files such as MIDI, audio, moving picture and still picture files. Namely, in this example, two or more types of content files are not stored mixedly in a single track, and the individual contents can be read out from the plurality of tracks in a parallel fashion (without overlapping each other) and passed to respective dedicated reproduction engines for reproduction purposes. That is, the reproduction engines also operate in parallel in corresponding relation to the content types. Process for reproducing data of a plurality of tracks in parallel is well known in the field of automatic performance and will not be described here. Note that reproduction timing of successive contents in a

single track is set to not overlap each other. After readout of such a program file, the program file is subjected to the same operations as described above.

The plurality of tracks may be implemented by dividing a same storage area as shown in Figure 8 (i.e., storing each type of content in a different divided track), or by  
 5 imparting track identifying data to each content instead of dividing the storage area (i.e., storing various contents mixedly in the tracks with track identifying data).

In reproducing a plurality of contents concurrently, it is desirable to impart a fade-in/fade-out effect or the like. For impartment of such a fade-in/fade-out effect, fading-in and fading-out contents may be prestored, or a command to impart fade-in and  
 10 fade-out may be embedded in a program along with fade-in/fade-out timing information so that the fade-in and fade-out is effected upon readout of such a command. Where the contents concern a music piece or MC speech, a command to impart an acoustic effect, such as a reverberation effect, may be embedded in addition to the fade-in/fade-out command. Further, where the contents concern a still or moving picture, there may be  
 15 embedded a command to impart a video effect such as a mosaic or wipe effect. These effect may be imparted during reproduction of the contents rather than at the start or end timing of the content reproduction.

Figure 9A is a diagram showing an example where the client station PC is a portable-type communication terminal MT, such as a cellular phone, PHS (Personal  
 20 Handy Phone System in Japan) phone or other mobile terminal equipment. Assume here that the portable-type communication terminal MT has a tone generating function such as a conventional tone generator or sequencer function. Figure 9B is a block diagram showing an exemplary inner structure of the portable-type communication terminal MT having such a tone generating function. The portable-type communication terminal MT  
 25 includes a conventional portable phone circuit 101, and a microcomputer installed therein and including a CPU 102, a RAM 103 and a ROM 104. The portable phone circuit 101 and microcomputer communicate with each other via a communication interface 105. The portable phone circuit 101 has an Internet function and a simplified Internet function. By establishing a radio communication connection between the terminal MT and any of  
 30 the program serving sites A - N, information communication between the internal microcomputer and the site A - N is permitted via the communication interface 105. Program and data necessary for implementing the tone generating function are stored in

the ROM 104 along with a program reproducing program (application software) of the present invention. In this case, the ROM 104 may comprise a rewritable memory, such as a flash ROM so that the tone generating program, data and/or program reproducing program of the present invention can be updated whenever necessary.

5       Let's assume here that various switches associated with the portable phone circuit 101 are used to perform functions of various input buttons of the communication terminal MT. In this case, information representing user's switch operation generated by the portable phone circuit 101 is received by the above-mentioned internal microcomputer via the internal communication interface 105, and the above-described various operations are  
10       carried out in accordance with input operation signals generated via the microcomputer. Further, various data, such as contents received from any of the program serving sites A - N, are received from the portable phone circuit 101 and passed via the communication interface 105 to the internal microcomputer for storage into the RAM 103. The thus-received contents and other data are passed via the interface 105 to the portable  
15       phone circuit 101 to be visually shown on a display associated with the phone circuit 101. Further, the received contents and other data, or contents and other data generated by the internal microcomputer can be delivered via the communication interface 105 to the portable phone circuit 101, from which they can be transmitted via a radio telephone line to another portable-type communication terminal MT or personal computer (e.g., by being  
20       attached to an e-mail) as desired. In addition, the contents generated by the internal microcomputer can be passed via the communication interface 105 to the portable phone circuit 101 so that they are audibly sounded through an internal speaker or visually shown on the display. The portable-type communication terminal MT may further include a MIDI interface 106 for exchange of MIDI performance data with the outside.  
25       Furthermore, any desired one of MIDI, audio, moving picture and still picture files received from any one of the program serving sites (servers) A - N may be stored into an appropriate storage so that it can be used as incoming-call informing melody or picture data or melody to be sounded during a call-holding period. Moreover, any one of the received MIDI, audio, moving picture and still picture files may be used as background  
30       music or visual image during a telephone call.

Also note that when some content is purchased by the user, the purchase price of the content may be added to the user's charge for using the communication terminal MT,

or may be billed to the user separately from the charge for using the communication terminal MT. In the case where the portable-type communication terminal MT is used as the client station PC like this, it may be equipped with only some, rather than all, of the above-mentioned functions.

5       Whereas the fast-forwarding (FF) or fast-rewinding (REW) button has been described as selecting another content immediately preceding or following a currently-reproduced content, it may be used to move the reproduction forward or backward by an amount corresponding to a predetermined time. Further, when a given content immediately preceding or following a currently-reproduced content is to be  
10   selected for a type of program whose contents of a plurality of tracks are reproduced concurrently, arrangements may be made for the user to decide a particular one of the tracks for which to move the reproduction forward or backward by one content or to fixedly preset such a particular one of the tracks for which to move the reproduction forward or backward. Furthermore, it is not always necessary for the inventive program  
15   reproduction system to possess both of the functions to fast-forward or fast-rewind the content, and only either one of the functions may be possessed. Moreover, the inventive system may be arranged to be able to fast-forward or fast-rewind during a temporary stop of the content reproduction instead of being able to fast-forward or fast-rewind during the content reproduction.

20       Display of various and instruction for purchasing a content may be performed using a Web browser. Namely, a Web browser process may be activated separately from the above-described client station processing so that the information display and content purchase instruction can be made in the Web browser process. Besides, the information display and content purchase instruction may be enabled during a temporary stop of the  
25   content reproduction rather than during the course of the content reproduction.

Program files, content files and various other data may be supplied from an external storage medium to the inventive program reproduction system, or may be supplied from an external device via a communication interface to the sites and/or client station.

30       Content information, such as program files, may be stored time-serially in successive storage areas, or content information stored in disbursed storage areas may be managed as a time-serial succession of data. Namely, it does not matter whether or not



the content information is stored in successive storage areas, as long as it can be managed as a time-serial succession of data.

Moreover, the above-mentioned functions of the present invention may be implemented by use of resources (such as a not-shown CPU, RAM and ROM) within the portable phone circuit 101, rather than by the internal microcomputer provided separately from the portable phone circuit 101.

Furthermore, the music files employed in connection with the present invention need not necessarily be in the MIDI format and may be prepared by encoding music performance information using some encoding scheme. The audio files need not be in the PCM format and may be in any other suitable compressed data format such as ADPCM or DPCM. Similarly, the moving picture and still picture files may be in a suitable compressed data format.

In summary, the present invention is characterized primarily in that program files including various content information, such as content URLs, are prestored in the client station so that necessary contents are read out collectively or one by one from a selected server on the basis of a selected one of the program files. By being thus arranged, the present invention can appropriately reproduce even a program comprising a mixture of a plurality of contents of different characters and thus provide programs of a great variety of contents. Further, by the capability to reproduce a program on the content-by-content basis, the present invention allows a user to reproduce the program while optionally fast-forwarding or fast-rewinding a part of the same. Further by the capability to designate any desired content in a program file to thereby selectively read out the designated content from a server, the user can purchase any desired content. Further, the user is allowed to freely create his or her own original program.

In addition, because various content-related information can be read out, content by content, on the basis of a program file, the present invention advantageously allows the user to view or gain information corresponding to any desired information.

**CLAIMS**

1. A server apparatus connectable to a client terminal apparatus via a communication network, said server apparatus comprising:
  - 5 storage means for storing a program file defining a reproducing sequence of a plurality of items of first contents information;
  - supply means for supplying said client terminal apparatus with the program file stored in said storage means;
  - reception means for receiving, from said client terminal apparatus, a purchase request
  - 10 for second contents information related to said first contents information; and
  - billing means for billing a user of said client terminal apparatus in accordance with the purchase request received from said client terminal apparatus.
2. A client terminal apparatus for receiving contents information via a communication network, said client terminal apparatus comprising:
  - 15 first reception means for receiving, from a predetermined site on the communication network, a program file defining a reproducing sequence of a plurality of items of first contents information;
  - second reception means for receiving, via the communication network, said first
  - 20 contents information defined by the program file received by said first reception means; and
  - transmission means for transmitting, to a predetermined purchase request reception site on the communication network, a purchase request for second contents information related to said first contents information,
  - 25 whereby a user of said client terminal apparatus is billed by the purchase request reception site in accordance with the purchase request.
3. A client terminal apparatus as claimed in claim 2 which further comprises reproduction means that is capable of reproducing the received first contents information
- 30 in accordance with the reproducing sequence defined by the received program file.

4. A client terminal apparatus as claimed in claim 3 wherein once the user makes a purchase request in correspondence with said first content information being reproduced by said reproduction means, said transmission means transmits the purchase request for said second contents information related to said first contents information being reproduced.
5. A client terminal apparatus as claimed in any one of claims 2 - 4 which further comprises third reception means for receiving, after the user is billed by said purchase request reception site in accordance with the purchase request, said second contents information corresponding to the purchase request.
6. A client terminal apparatus as claimed in any one of claims 1 - 5 wherein said first contents information is sample contents information, and said second contents information related to said first contents information is purchasing contents information corresponding to the sample contents information.
7. An apparatus as claimed in any one of claims 1 - 6 wherein said client terminal apparatus is a portable communication terminal.
8. An apparatus as claimed in any one of claims 1 - 6 wherein said client terminal apparatus is a personal computer.
9. An apparatus as claimed in any one of claims 1 - 8 wherein the plurality of items of contents information including different types of contents include contents representative of a music performance in a predetermined data format and contents representative of audio sounds.
10. An apparatus as claimed in any one of claims 1 - 9 wherein the program file includes location information indicative of respective stored locations, on the communication network, of the plurality of items of contents information, and wherein said client terminal apparatus receives the contents information on the basis of the location information.

11. A system comprising a server and a client terminal connectable with each other via a communication network so that contents information is received by said client terminal,

(a) said server comprising:

storage means for storing a program file defining a reproducing sequence of a plurality  
5 of items of first contents information; and

supply means for supplying said client terminal with the program file stored in said  
storage means,

(b) said client terminal comprising:

first reception means for receiving the program file supplied by the server;

10 second reception means for receiving, via the communication network, the first  
contents information defined by the program file received by said first reception means;  
and

transmission means for transmitting, to a predetermined purchase request reception site  
on the communication network, a purchase request for second contents information  
15 related to said first contents information,

whereby a user of said client terminal apparatus is billed by the purchase request  
reception site in accordance with the purchase request.

12. A system as claimed in claim 11 wherein said server is the purchase request  
20 reception site.

13. A system as claimed in claim 11 or 12 wherein said client terminal further comprises  
third reception means for receiving, after the user is billed by said purchase request  
reception site in accordance with the purchase request, said second contents information  
25 corresponding to the purchase request.

14. A method for supplying information to a client terminal by a server connectable to  
said client terminal via a communication network, said server including storage means for  
storing a program file defining a reproducing sequence of a plurality of items of first  
30 contents information, said method comprising:

a step of supplying said client terminal with the program file stored in said storage  
means; and

a step of receiving, from said client terminal, a purchase request for second contents information related to said first contents information; and

a step of billing a user of said client terminal in accordance with the purchase request received from said client terminal.

5

15. A method for receiving contents information by a client terminal via a communication network, said method comprising:

a step of receiving, from a predetermined site on the communication network, a program file defining a reproducing sequence of a plurality of items of first contents information;

10

a step of receiving, via the communication network, said first contents information defined by the received program file; and

a step of transmitting, to a predetermined purchase request reception site on the communication network, a purchase request for second contents information related to said first contents information,

15

whereby a user of said client terminal is billed by the purchase request reception site in accordance with the purchase request.

16. A method for, in a system comprising a server and a client terminal connectable with each other via a communication network, allowing said client terminal to receive contents information, said server including storage means for storing a program file defining a reproducing sequence of a plurality of items of first contents information, said method comprising:

20

a step of causing said server to supply said client terminal with the program file stored in said storage means,

25

a step of causing said client terminal to receive the program file supplied by said server;

a step of causing said client terminal to receive, via the communication network, said first contents information defined by the received program file; and

30

a step of transmitting, to a predetermined purchase request reception site on the communication network, a purchase request for second contents information related to said first contents information,

whereby a user of said client terminal is billed by the purchase request reception site in accordance with the purchase request.

5 17. A computer program comprising computer program code means for performing all the steps of claim 14 when said program is run on a processor of said server.

18. A computer program comprising computer program code means for performing all the steps of claim 15 when said program is run on a processor of said client terminal.

10 19. A computer program as claimed in claim 17 or 18 embodied on a machine-readable storage medium.



INVESTOR IN PEOPLE

Application No: GB 0118636.0  
Claims searched: 1-19

Examiner: Stephen Probert  
Date of search: 19 September 2001

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): G4A (AUSB); H4F (FBB, FDE, FKX)

Int Cl (Ed.7): G06F 17/30; H04N 5/00, 7/16

Other: Online: WPI, INSPEC, EPODOC, IEL

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	WO 01/09864 A1 Erudite, LLC — See abstract	—
A	US 6256554 B1 DiLorenzo — See abstract	—
AP	US 6018765 Durana et al — See abstract	—
A	US 5794217 Allen — See abstract	—

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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